

WHAT IS CLAIMED IS:

- 1 1. A hafnium carbide containing ceramic fiber derived from
2 a preceramic polymer.
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- 4 2. A hafnium nitride containing ceramic fiber derived from a
5 preceramic polymer.
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- 7 3. A hafnium containing preceramic polymer derived from the
8 reaction of a hafnium containing halide compound and an
9 amine containing organic compound.
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- 11 4. The preparation of a hafnium containing preceramic
12 polymer through the reaction of hafnium halide compound with
13 any of the following compounds; ethylene diamine, dimethyl
14 ethylene diamine, piperazine, allylamine, or polyethylene-
15 imine.
16
- 17 5. The production of a hafnium carbide containing ceramic

1 fiber comprising the steps of:

- 2 a. melting a hafnium containing preceramic polymer;
- 3 b. extruding said polymer through an orifice to form
- 4 fiber;
- 5 c. cross-linking said fiber; and
- 6 d. heating said cross-linked fiber under controlled
- 7 atmospheric conditions at a temperature greater than
- 8 600 degrees centigrade to obtain a hafnium carbide
- 9 containing ceramic fiber.

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11 6. The production of a hafnium nitride containing ceramic
12 fiber comprising the steps of:

- 13 a. melting a hafnium containing preceramic polymer;
- 14 b. extruding said polymer through an orifice to form
- 15 a fiber.
- 16 c. cross-linking said fiber; and
- 17 d. heating said cross-linked fiber under in an
- 18 ammonia containing atmosphere at a temperature greater

- 1 than 600 degrees centigrade to obtain a hafnium
- 2 nitride containing ceramic fiber.
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